ABSTRACT

A robotic apparatus for traversing a selected area autonomously that senses orientation relative to the Earth's magnetic field or other "environmental" signals. The robotic apparatus is provided in two models, a master that can record directive and compass or "environmental signal" readings to provide at least one command recorded on a machine-readable medium representing an instruction for traversing an area of interest, and a slave that lacks the recording capability. Both master and slave models can replay recorded commands, and compare the expected orientation from the command with an actual orientation sensed during autonomous operation. If an error exceeding a predetermined value is observed, a corrective action is taken. The robotic apparatus is able to utilize a tool to perform a task at one or more locations, such as cutting, shoveling and digging. In one embodiment, the robotic apparatus is a lawn mower.